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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/588,396	06/06/2000	Richard F. Buckley	19546-020-(E-3915)	9558

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EXAMINER

NOVOSAD, JENNIFER ELEANORE

ART UNIT	PAPER NUMBER
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3634

DATE MAILED: 12/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/588,396

**Applicant(s)**

BUCKLEY, RICHARD E.

**Examiner**

Jennifer E. Novosad

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 04 June 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 14-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 14-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

*At the outset*, it is noted that the Examiner of record in this application has changed.

Please direct all future correspondences to Examiner Jennifer E. Novosad, Art Unit 3634.

This non-final Office action is in response to the amendment filed June 4, 2004, by which claims 22 and 23 were canceled. Claims 14-21 are pending.

#### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 14-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd.

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App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 14 recites the broad recitation "elevated temperatures" (in line 2), and the claim also recites "temperatures of between approximately 1000°C and 1400°C" (in line 15) which is the narrower statement of the range/limitation.

In claim 14, the recitation "**will be** in contact, and which **will support** the wafer when the wafer is positioned thereon" (emphasis added) is line 8-9 renders the claim indefinite since applicant seeks to improperly link a functionally recited element, i.e., the wafer, to a positively recited structure, i.e., the lower portion. *Thus*, it is unclear whether the claim is positively requiring that a wafer be positioned on the lower portion, and thus the metes and bounds of the claim cannot be properly ascertained.

The recitation "the lower portion substantially conforms to the portion of the wafer supported thereon" in the last two lines of claim 14 renders the claims indefinite. *In particular*, a wafer is not an element of the claimed device and it is improper to seek to define claimed structure based on a comparison to some unclaimed element. In this case, the boundaries of the claim cannot be properly ascertained because one would not know whether their device infringed the instant claim until someone else later added a wafer. In other words, a device as defined in the claims would infringe the claim with one particular wafer while the exact same device would not infringe the claim when another wafer is used. *Accordingly*, the features of the device, itself, must be defined instead of relying upon a comparison with an ascertained element. This rejection is also applicable to claim 18 since claim 18 seeks to link the functionally recited "wafer" to the positively recited support guides and lower portion.

Claim 17 is rendered indefinite since the claim fails to further limit the claimed structure of the boat and thus the metes and bounds of the claim cannot be properly ascertained.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 14 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,657,879 (Anderson *et al.* '879).

Anderson *et al.* '879 discloses a wafer boat for holding wafers (18") whereby the boat comprises a first end (left side of Figure 1) and a second end (right side of Figure 1), a plurality of slots (between 16 and 17 on lower portion at 15 in Figure 1) between the first and second ends with each of slots having a first (at 16 on 14) and second (at 16 on the upper portion containing 17 in Figure 1) upper support guides; a lower portion (14 - see Figure 2) which is adapted to contact and support wafers (18") supported thereon; the boat having an inner radius originating from a centerpoint (generally below 12 in Figure 12) whereby the slots extend along an arc having a radius of curvature corresponding to the inner radius; the lower portion (at 14) having a *generally* arcuate and concave contour as viewed from the centerpoint.

With respect to the recitations "during wafer processing at elevated temperatures" and "at semiconductor processing temperatures... wafer supported thereon" in claim 14, it is noted that these recitations are merely functional. *Thus*, a reference need only be capable of performing

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these functions in order to meet the claim language. *Accordingly*, the Anderson *et al.* '879 reference is considered to be capable of meeting these limitations.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson *et al.* '879 as applied to claims 14 and 20 above, and further in view of U.S. Patent No. 5,538,230 (Sibley '230).

Anderson *et al.* '879 disclose the boat as advanced above.

The claims differ from Anderson *et al.* '879 in requiring: (a) the boat to comprise silicon carbide (claim 15), and (b) the carbide to be a recrystallized carbide (claim 16).

*With respect to (a)*, Sibley '230 teaches a wafer boat made from silicon carbide.

Thus, it would have been an obvious design choice to one of ordinary skill in the art at the time the invention was made to have fabricated the boat from silicon carbide for ease in economy and manufacture while also producing a stronger boat that can withstand higher temperatures.

*With respect to (b)*, it would have been obvious to one of ordinary skill in the art at the time the invention was made that the silicon carbide would be recrystallized to a normal state when placed in a cooler environment after being removed from a high temperature environment.

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Claims 17-19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson *et al.* '879, alone.

*Insomuch as the claims are best understood (in view of the Section 112 rejections advanced above), Anderson et al. '879 disclose the boat as advanced above.*

The claims differ from Anderson *et al.* '879 in requiring: (a) the boat configured to hold a wafer having a specific diameter (claim 17), (b) an angle relative to the wafer to be approximately 37 degrees (claim 19), and (c) the thickness of the boat to be not less than 5mm.

*With respect to (a) and (b),* although the claims are not positively claiming the wafers, it would have been obvious to one of ordinary skill in the art at the time the invention was made that the wafer boat could hold the specified wafers, as determined through routine experimentation and optimization, thereby increasing usage capabilities.

*With respect to (c),* it would have been an obvious design choice to one of ordinary skill in the art at the time the invention was made to have fabricated the boat having the specified thickness, for ease in economy and manufacture thereby producing a lightweight boat.


### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer E. Novosad whose telephone number is (703)-305-2872. The examiner can normally be reached on Monday-Thursday, 5:30am-4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl D. Friedman can be reached on (703)-308-0839. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Jennifer E. Novosad  
Primary Examiner  
Art Unit 3634

Jennifer E. Novosad/jen  
December 7, 2004